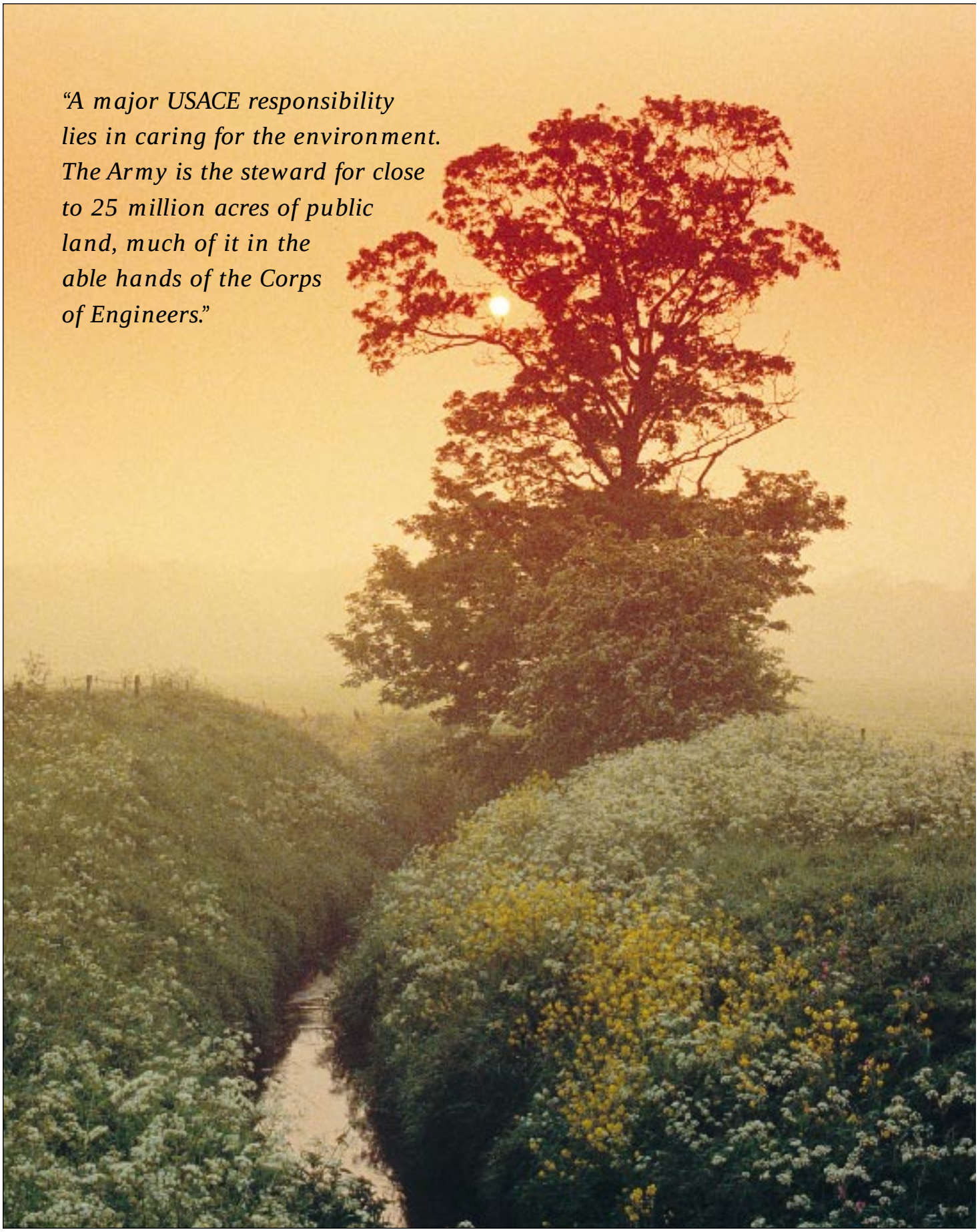
1996 Annual Report

Environmental Programs

US Army Corps of Engineers®

Environmental Mission

The U.S. Army Corps of Engineers cleans up sites contaminated with hazardous waste, radioactive waste, or ordnance; complies with federal, state, and local environmental laws and regulations; strives to minimize our use of hazardous materials; and conserves our natural and cultural resources. The Corps serves the nation through superior management, design, and execution of the full range of cleanup and protection activities.


"A major USACE responsibility lies in caring for the environment. The Army is the steward for close to 25 million acres of public land, much of it in the able hands of the Corps of Engineers."

UNITED STATES ARMY
THE CHIEF OF STAFF

May 1, 1996

U.S. Army Corps of Engineers—The Environmental Corps

In mid-April 1996, I was in San Francisco visiting the South Pacific Division of the Corps of Engineers, which covers all or part of eight states in the southwest U.S. I was impressed with the full breadth of USACE's responsibilities. The soldiers and civilians of USACE are an integral part of the fabric of America through their flood control, navigation, recreation, regulatory, and other civil works activities.

A major USACE responsibility lies in caring for the environment. The Army is the steward for close to 25 million acres of public land, much of it in the able hands of the Corps of Engineers. We do not own this land; we are caretakers of the land—and of the plant and animal species that inhabit it. The American people entrusted it to our care, and we must fulfill their trust. We have a responsibility to conserve and preserve the environment for the future. We must preserve our resources and training areas today, so that they will be available to train our soldiers for the challenges of the 21st century.

The nation's desire to improve our environment is being put into action by the soldiers and civilians of the Army Corps of Engineers, which is doing more to restore the environment in the southwestern United States than all other federal agencies combined. The men and women of the Corps of Engineers have undertaken many projects that prove that the Army has adopted the philosophy, "We did not inherit the earth from our parents, we borrow it from our children."

For example, the Sonoma Baylands Project is currently restoring tidal wetlands on 348 acres along San Francisco Bay that had been converted to agriculture. Over two million cubic yards of dredged material were placed on the site to accelerate the restoration of the lands. This project demonstrates that dredged material (sand and mud), which was previously treated as a waste product, can be used for beneficial purposes. Consequently, the soldiers and civilians of the Corps of Engineers can continue its navigation mission of dredging federal shipping channels while benefiting the environment by providing valuable habitat for fish and wildlife, including several endangered species—a win–win proposition.

The Yolo Basin Wetlands Project involves restoring approximately 3,300 acres of wetlands and is being constructed entirely within an operational floodway of the Corps' Sacramento River Flood Control Project. The project is an important element of the North American Waterfowl Plan, providing an important link in the Pacific flyway. The restoration is designed to improve waterfowl habitat while not hindering the primary flood control function.

The Corps' care for the environment is also evident in military projects, like the Sacramento Army Depot. The rapid conversion of this contaminated installation (it was a Superfund site) to civilian reuse was a direct result of the partnering among the Army and various federal, state, and local government organizations, and the general public surrounding the Depot. Working with

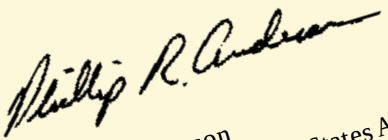
federal and state environmental regulators, the team aggressively developed and maintained a vision for cleanup and reuse. Thanks to the goodwill and partnership of all parties, 3,000 new civilian jobs were created when the installation was turned over to the city.

By combining proactive environmental leadership in all that they do, the soldiers and civilians of the Corps of Engineers set a great example for the Army—and the nation—to follow. Our children, and our children's children, will be the ones to benefit most from this terribly important work.

Soldiers are our credentials!

Dennis J. Reimer
General, United States Army
Chief of Staff

The importance of our environmental responsibilities cannot be overstated. In the execution of all our missions, the American people expect and can count on us to be the "Environmental Corps." We have a critical role in supporting the Army, DoD, and other federal agencies in meeting the challenges of protecting and cleaning up our environment. The Corps' expertise is being applied in new and innovative ways to solve the complex and ever-changing environmental problems our nation faces. I cannot praise too highly the response of the Corps' team, particularly at the project level, in the successful execution of our environmental programs as they grew beyond all expectations.



Phillip R. Anderson
Brigadier General, United States Army
Director of Military Programs
Headquarters, U.S. Army Corps of Engineers

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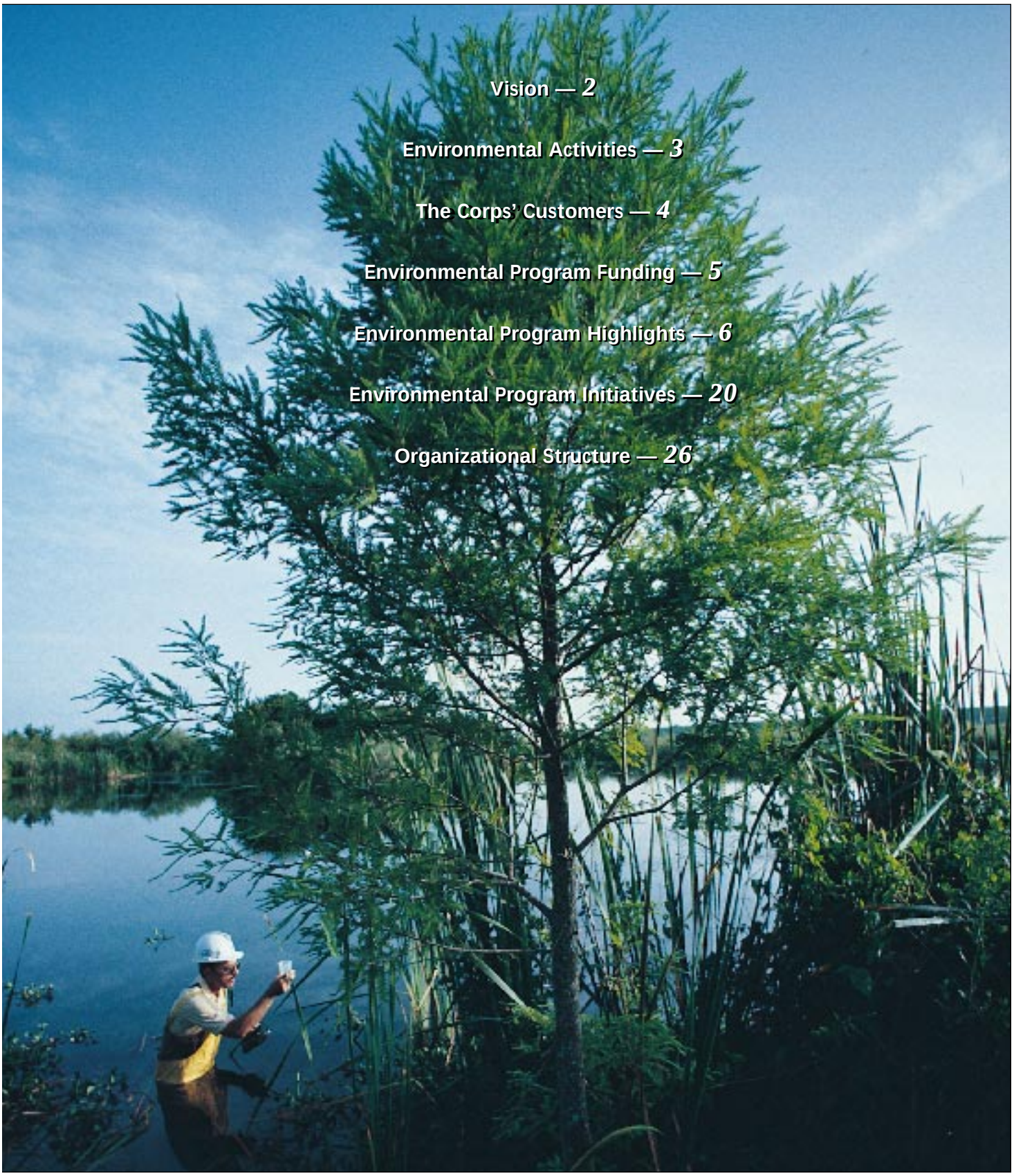


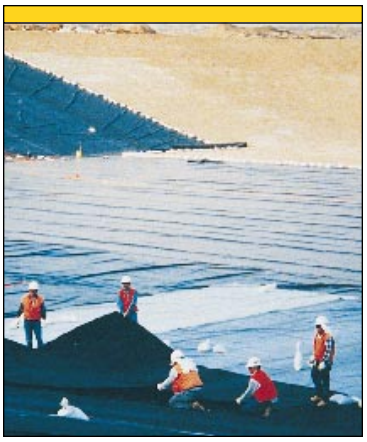
Vision

The Corps strives to provide premier environmental engineering services, ever enhancing our quality management and technical expertise.

We will continue to serve as prudent stewards of taxpayer funds while pursuing the responsible protection of human health and the environment. The Corps is setting the standard for environmental protection and restoration with programs that

- focus on the needs of the customer;
- benefit Army installations;
- strive to reduce costs and save time;
- focus on reducing or eliminating pollution at the source;
- conserve and protect our natural and cultural resources;
- focus on partnering with customers, contractors, regulators, and the public;
- use state-of-the-art technology; and
- enhance the Army's environmental security mission.

Environmental Activities



The Army's environmental strategy into the 21st century defines its leadership commitment and philosophy for meeting present and future environmental challenges. It provides a framework to ensure that environmental considerations are integral to the Army mission and that an environmental stewardship ethic governs all Army activities. That framework is supported by four pillars:

- *Restoration*—restore contaminated sites as quickly as funds permit.
- *Compliance*—comply with all environmental laws.
- *Prevention*—reduce or eliminate pollution at the source.
- *Conservation*—conserve and preserve natural and cultural resources so they will be available for present and future generations to use.

The Army executes its broad environmental mission with dedicated installation and major command personnel and through reimbursable projects and activities performed by the Corps of Engineers.

The Corps strives to provide quality support and to remain the environmental execution agency of choice for today's—and tomorrow's—Army.

The Corps performs a full range of environmental activities.

Restoration	Compliance	Prevention	Conservation
Air stripping	*National Environmental Policy Act/environmental impact statements*	*Pollution prevention plans*	*Forestry management*
Removal of underground storage tanks	*Environmental Compliance Assessment System (ECAS) assessments*	*Solid waste reduction*	*Wildlife management*
Bioremediation	*Environmental baseline studies*	*Hazardous waste reduction*	*Historic preservation*
Vitrification	*Air and water quality*	*Hazardous materials reduction*	*Archaeology*
Thermal treatment	*Noise abatement*	*Reductions in energy use*	*Land management*
Construction of landfill caps	*Asbestos*	*Recycling activities*	*Wetlands restoration*
Pumping and treatment of contaminated water	*Radon*	*Process evaluations*	*Coastal zone management*
Removal of unexploded ordnance	*Pest management*	*Reviews of military specifications*	*Cultural resources*
Cleanup of radioactive waste	*Solid waste*	*Elimination of ozone-depleting chemicals*	*Endangered species*

The Corps' Customers

The Corps has a long history of supporting the Army and the Department of Defense (DoD) through our military construction program. The Corps also provides comprehensive environmental services to Army and Air Force installations and to the Defense Logistics Agency (DLA) and other DoD agencies.

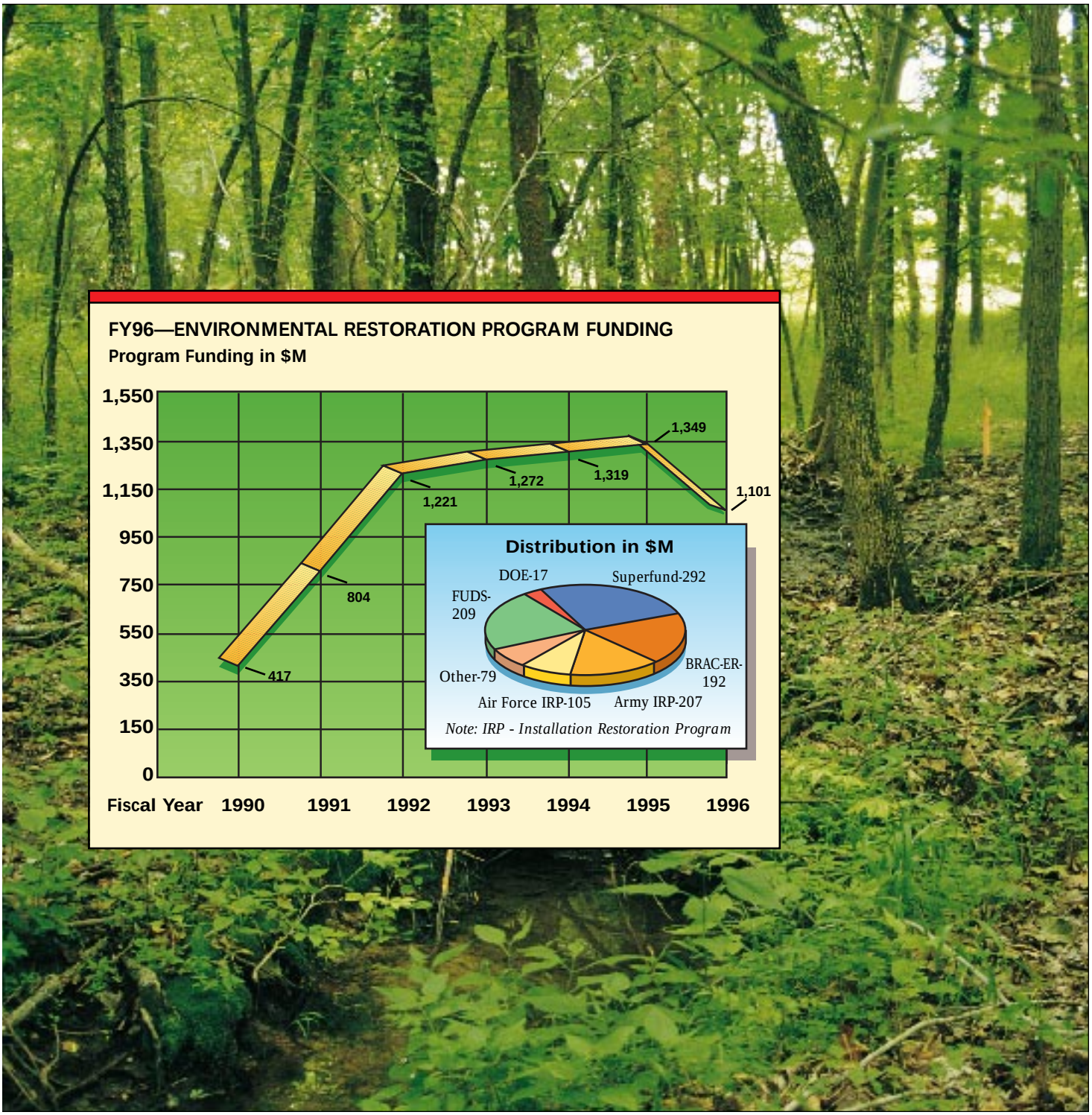
We serve as the DoD Execution Agent for cleanup at formerly used defense sites (FUDS). Also, we manage the Defense and State Memorandum of Agreement (DSMOA) program, which provides the states and territories with the resources for technical services related to the cleanup at DoD sites.

We have supported the Superfund program, managed by the Environmental Protection Agency (EPA), since 1982 and will continue to do so. As our capabilities have grown, we have expanded our support to the following federal agencies:

- Commodity Credit Corporation (CCC)
- Department of Energy (DOE)
- Department of the Interior
- Department of Justice
- Department of Transportation
- Economic Development Administration
- Farm Services Agency
- Federal Aviation Administration (FAA)
- Federal Emergency Management Agency (FEMA)
- General Services Administration
- National Oceanic and Atmospheric Administration.

Environmental Program Funding

Our environmental programs have grown from approximately $400 million in FY90 to more than $1.1 billion in FY96. We expect funding to remain level for the rest of the decade because our programs have matured. Our goals are to meet our customers' needs and to continuously improve our service through quality management and state-of-the-art engineering.



The Environmental Division at Corps headquarters is organized by program to serve our customers more effectively. A branch organization is dedicated to the management of each program so it can develop program-specific expertise, allocate resources, and provide guidance. (See organization chart at end of report.) Here, we present an overview of each program and discuss some of our FY96 accomplishments.

FUDS Cleanup of Formerly Used Defense Sites

The DoD is responsible for cleaning up contamination of properties that it or one of its components formerly owned or leased. As the Execution Agent for DoD, the Corps manages the cleanup of such sites. Cleaning up FUDS is a major undertaking, with 9,029 potentially contaminated sites ranging from military training sites containing ordnance, to industrial operations and production facilities containing solvents, organic materials, and petroleum contamination. We are making steady progress. In FY96, the Corps executed all our scheduled FUDS projects—a total program of $209 million.

Former Stead Air Force Base, Nevada

When Stead Air Force Base was closed more than 25 years ago, its housing units—mostly duplexes plus some single-family homes—were sold to private parties. The homes originally had been heated by oil stored in tanks buried in their yards, but in the late 1960s, the Air Force converted the heating systems to natural gas and abandoned the underground storage tanks (USTs). In 1992, about 130 USTs were closed in place by filling each with a cement slurry. Subsequently, the Corps offered to remove any unclosed tanks. Through a Total Environmental Restoration Contract (TERC), the Corps uncovered, removed, and disposed of 217 USTs within 10 months. We also collected and analyzed soil samples from under the 130 tanks that had been closed in place. Within another month, we had restored the landscaping around the nearly 350 properties affected by the project. We completed the work with essentially no complaints from the homeowners and with positive recognition from the Nevada regulatory agency.

Former Raritan Arsenal, New Jersey

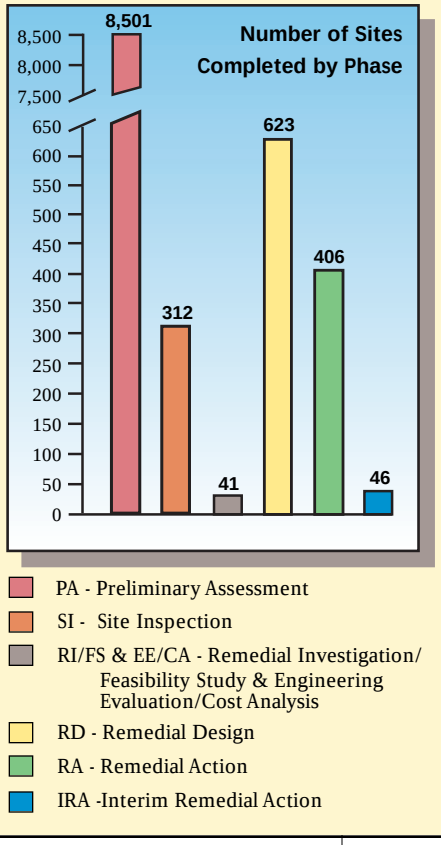
Now the site of a well-developed business and light industrial park where 28,000 people work, the former Raritan Arsenal was used extensively for Army ammunition storage and demilitarization operations from 1917 to 1963. The Corps found records indicating that the Army had buried chemical warfare materiel on the site. We located eight M47 bombs that had been filled with mustard agent; five M70 mustard bombs; more than 420 glass vials filled with diluted solutions of mustard, phosgene, lewisite, and chloropicrin; and 96 chemical grenades containing tear gas and a vomiting agent. We removed the chemical warfare materiel and shipped it as hazardous waste to other locations for safe storage or disposal. We then decontaminated the soil where mustard agent had leaked. We attribute our successful removal of this public safety hazard to the teamwork of the Corps, Army chemical weapons experts, and civilian contractors.

Former Blaine Naval Ammunition Depot, Nebraska

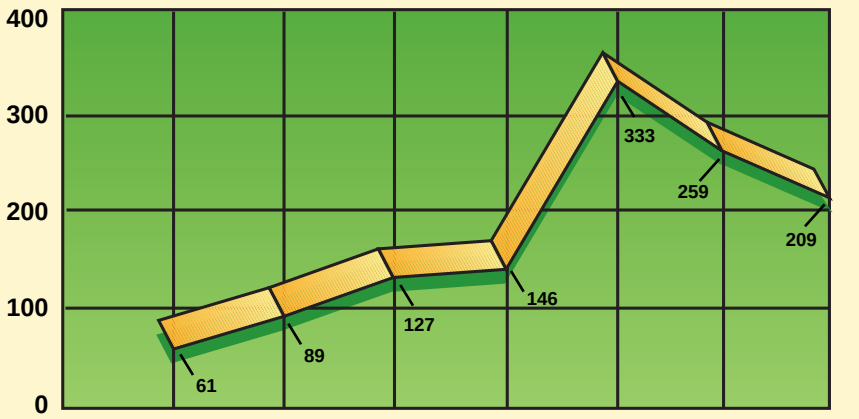
The groundwater under the site of the former Blaine Naval Ammunition Depot was contaminated with TCE (trichloroethylene—a solvent). We began remediating the TCE plume in FY96, using an air sparging system; air injected into the plume volatilizes the contaminant so that it can be evacuated from the soil. Air sparging is lowering contaminant levels in the vadose zone and in the groundwater from 1,000 parts per billion to the low teens.

To reduce downstream levels of TCE to local drinking water standards (five parts per billion), we planned a pilot study of an innovative technology developed by DOE. That technology involves injecting methane and nutrients into the plume to enhance the growth of resident soil microorganisms that degrade contaminants. The system will be installed during FY97.

FY96—FORMERLY USED DEFENSE SITES PROGRAM STATUS



FY96—FORMERLY USED DEFENSE SITES PROGRAM STATUS
Program Funding in $M



IRP Army Installation Restoration

The Corps' districts clean up active installations in support of the Army's Installation Restoration Program (IRP) by performing studies, developing designs, and conducting remedial actions. The Army has more than 10,000 sites that may be contaminated with ordnance and explosive wastes; solvents; heavy metals; pesticides; plating wastes; petroleum, oil, and lubricants (POL); or other hazardous wastes. Those contaminants are located in landfills, USTs, soils and fill materials, and aquifers. In FY96, the Corps completed all of our scheduled Army IRP projects—a total program of $207 million.

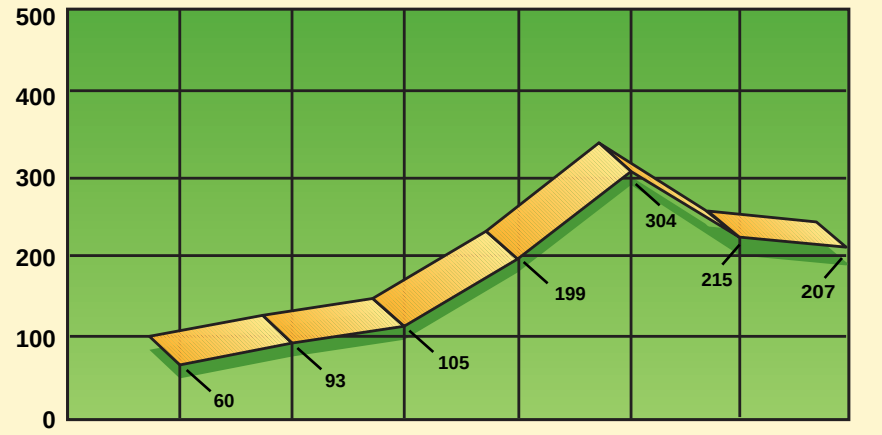
Fort Lewis, Washington

The Corps used innovative technology—soil vapor extraction/air sparging—to treat contaminated groundwater at Fort Lewis. By using innovative technology instead of typical pump-and-treat technology, the Corps reduced the estimated time for remediation from more than 30 years to no more than five years. As a result, operating and maintenance costs are projected to total only $3 million, rather than more than $13 million.

Fort Greely, Alaska

We began a multiyear project to remediate the sites of Fort Greely's fire burn pits, which had been used to train fire department and rescue personnel. For training exercises, the pits were soaked with water mixed with diesel fuel, jet fuel, or waste oil, and then ignited. Tests revealed subsurface hydrocarbon contamination to depths of 27 feet. To clean the sites, we selected bioventing, which involves injecting air into the subsurface to increase biological activity. Because of the high cost of extending electrical service to the sites to run the air compressors, we used solar power. The innovative use of a natural resource—the sun—to operate the bioventing system has resulted in substantial cost savings at the installation and has generated significant interest among several state agencies.

FY96—ARMY INSTALLATION RESTORATION PROGRAM STATUS
Program Funding in $M

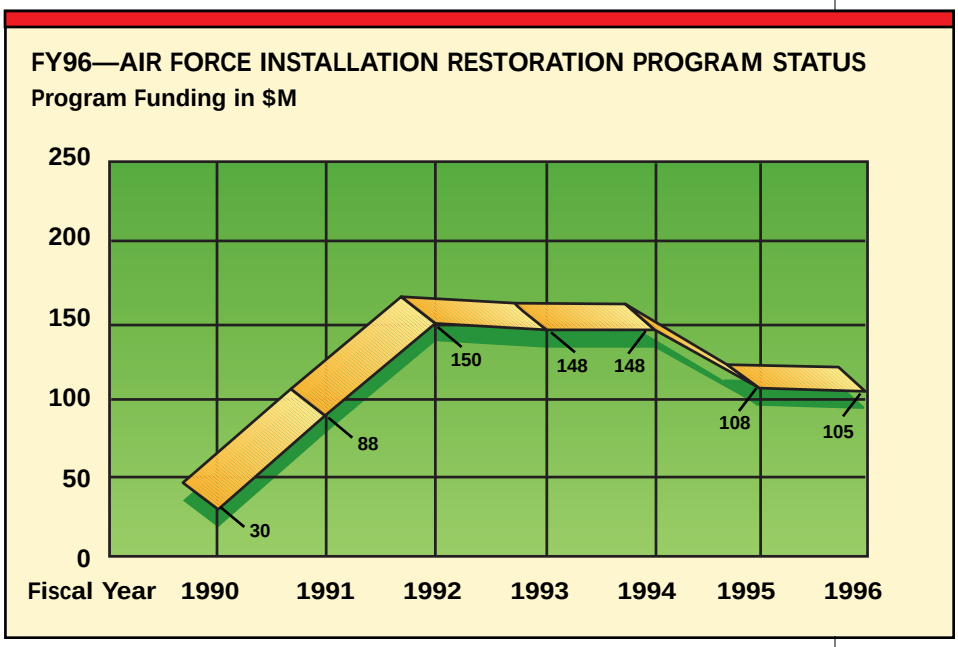


IRP Air Force Installation Restoration

In support of the Air Force IRP, the Corps has been cleaning up environmental contamination at more than 25 Air Force bases nationwide. The Air Force reports that it is highly satisfied with the Corps' service. In FY96, the Corps executed all of our Air Force IRP projects—a total program of $105 million.

K.I. Sawyer Air Force Base, Michigan

The Corps awarded a $10.5 million TERC for the design and construction of a cap over a 40-acre landfill that had been operated at K.I. Sawyer Air Force Base for nearly 14 years. Through a strong partnership with the TERC contractor, the state, and the base, we used approaches that enabled us to cut costs substantially. For instance, the state agreed to change the minimum slope requirement from 4 percent to 3 percent and to let us use clay instead of a geomembrane. In addition, the base identified material on site, including concrete from two buildings in the weapon storage area and topsoil from a skeet range, that could be used as fill. As a result, the project cost nearly 60 percent less than originally budgeted, saving nearly $6.3 million. We completed the project in just nine months.

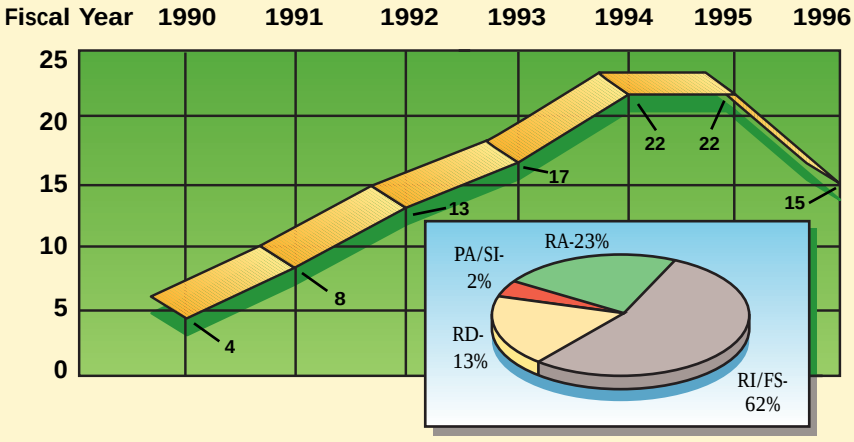


IRP Defense Logistics Agency Installation Restoration

The Corps is cleaning up environmental contamination at eight DLA sites. In FY96, the Corps executed all of our DLA IRP projects, representing a total program of $25 million.

Defense Distribution Region West Facility, California

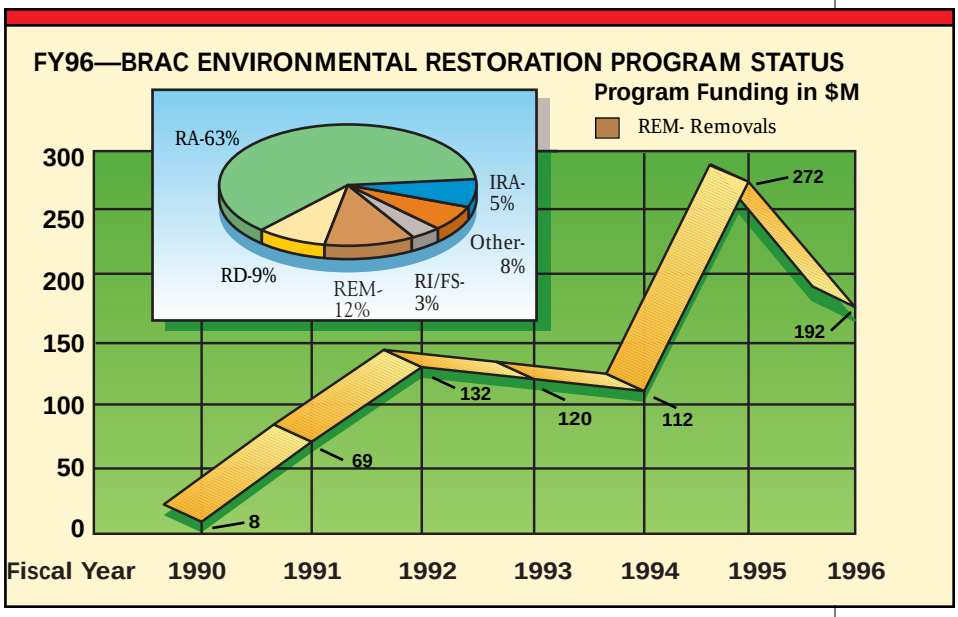
FY96—DLA INSTALLATION RESTORATION PROGRAM STATUS
Program Funding in $M



Contractors conducting a remedial investigation at DLA's facility in Tracy, California, identified pesticide residues in the soil inside the fence at the child care center. Within two weeks, the Corps confirmed the presence of pesticides and began taking corrective action. Forty days later, the site was cleaned up. We credit our success to partnering, rapid response, and effective communication. One of the keys to the successful cleanup of the child care center was the availability of Corps preplaced remedial action contracts.

BRAC Base Realignment and Closure — Environmental Restoration

The Corps performs environmental restoration services at Army and Air Force installations affected by the Base Realignment and Closure program. Working closely with Army and Air Force commands and installations in this complex program, the Corps responds to frequently changing requirements while maintaining demanding schedules for cleanup and property transfer. In FY96, the Corps executed all of our scheduled study, design, and remedial action projects, representing a total program of $192 million.



March Air Force Base, California

March Air Force Base had several sites where it disposed of domestic solid waste, demolition debris, transformer cases, waste oils, solvents, paints, pesticide residues, and other wastes resulting from aircraft operations at the base. We developed a plan to consolidate the wastes into two new, lined cells. Using lined cells prevents the escape of contaminants from the wastes into the air, soil, and groundwater.

We completed the first cell, placing the wastes from six sites into it. Construction of that single cell, rather than capping and monitoring six separate landfills, saved the installation more than $30 million and shortened the cleanup schedule by three to five years. Moreover, the use of this approach freed 66 acres of land for cleanup and transfer to civilian use as part of the realignment of the base into the smaller March Air Reserve Base.

Savanna Army Depot, Illinois

The Savanna Army Depot has been testing, storing, and destroying ammunition for 80 years. When DoD decided to close the depot, it offered part of the site to the state. The state is considering using the site to build a prison, thus retaining some of the jobs lost as a result of the depot's closure. However, the state wanted assurance that the property was safe to build on—that no unexploded ordnance remained at the site.

The Corps initiated an ordnance removal action in April 1996. Because the state wanted to break ground for the prison by mid-June 1997, we developed an innovative approach that enabled us to streamline the process without sacrificing quality or safety. The project was completed ahead of schedule and under budget. We found no unexploded ordnance.

Fort Devens, Massachusetts

Fort Devens was used for mobilization and training functions for more than 70 years. Because Fort Devens's mission involved handling, storing, and using military ordnance, some 300 sites at this 9,300-acre installation required varying degrees of environmental evaluation or cleanup at an estimated cost of $75 million. The Corps did archive searches for information on ordnance and explosive use and conducted surveys, sampling, and remedial design and removal actions. As a result of our work, Fort Devens closed and initiated transfer of property more than a year ahead of schedule. To date, the Army has transferred 2,000 acres and leased another 600 acres for redevelopment at Fort Devens.

DSMOA Management of Defense & State Memorandum of Agreement

The Corps manages and serves as the DoD Execution Agent for the DSMOA program, which funds states and territories for the technical services they provide to support the cleanup of active and closing DoD facilities and FUDS. Between FY90 and FY96, the program provided nearly $170 million to 45 states and territories that have signed a DSMOA with DoD and a Cooperative Agreement with the Corps. This program has helped expedite the cleanup process and has fostered improved communications and cooperation between the states and DoD, providing a way for the state and DoD to resolve problems and thus reduce or avoid costs.

DoD avoided some $89 million in costs for environmental restoration at several bases in Texas because the state's DSMOA staff recommended less costly remedies. Moreover, state-instituted time-saving measures resulted in expedited cleanup or transfer of federal land for private development.

To date, the Corps has documented more than 140 success stories that have resulted in a $2.1 billion cost avoidance and a 12-to-1 return on investment. Through FY96, no litigation (administrative or judicial) has been waged by the states or territories against DoD.

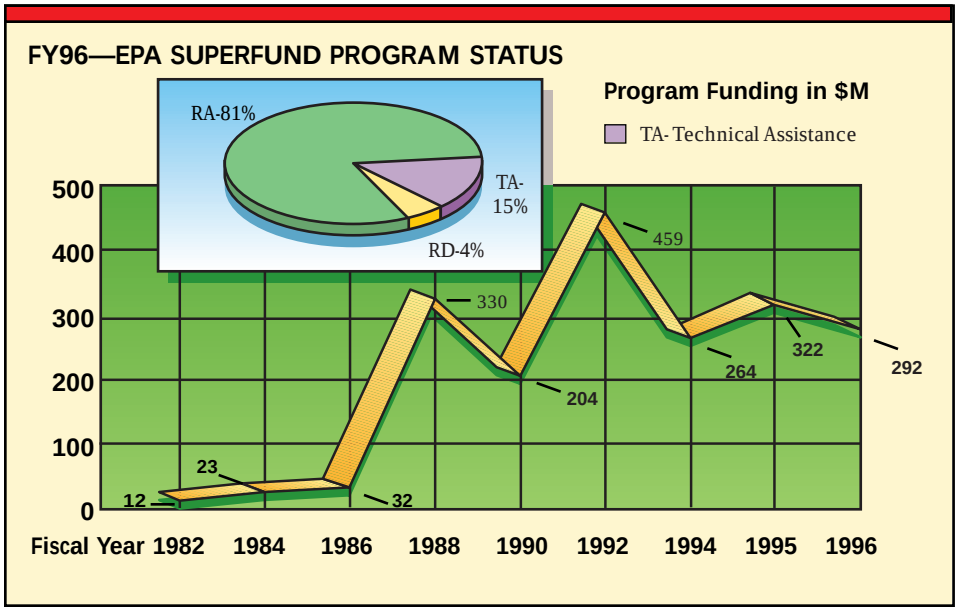
Environmental Quality Program

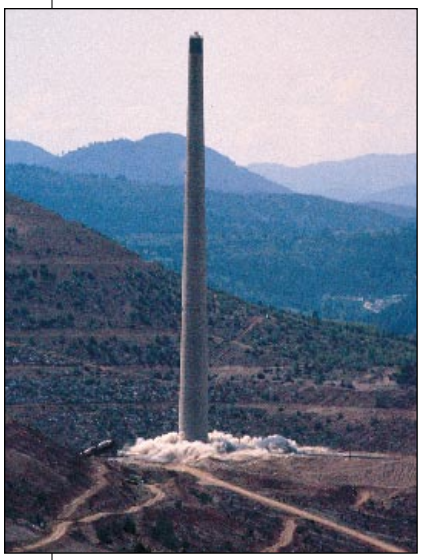
Our environmental quality program encompasses a variety of compliance, prevention, and conservation projects. Under this program, we have been supporting Army installations for more than 20 years. That support includes developing procedures and managing construction projects to comply with air, drinking water, wastewater, and solid waste laws and regulations. We also work with the installations to preserve and restore their natural and cultural resources, as well as to find ways to recycle hazardous materials and to avoid creating wastes.

During FY96, projects executed under our environmental quality program totaled more than $200 million. This program will grow as we complete our restoration projects and begin focusing more on compliance, prevention, and conservation.

EPA Support of EPA Superfund

The Corps provides design, construction, real estate services, and technical assistance to the EPA for the Superfund program. EPA was our first customer, and this partnership has continued for more than a decade. The Superfund program and EPA's support were instrumental in the development of the Corps' environmental remediation expertise and mission. The Corps' role in the Superfund program has grown significantly, from $12 million in FY82 to $292 million in FY96.





Bunker Hill Superfund Site, Idaho

The Bunker Hill mining facility, located in Kellogg, Idaho, is one of the largest and most complex hazardous waste sites in the nation. Closed in 1981, the facility covered 21 square miles and contained a lead smelter, a zinc plant, a phosphoric plant, a fertilizer plant, and a landfill. The mining and smelting operations contaminated the area with heavy metals, including lead, zinc, and cadmium.

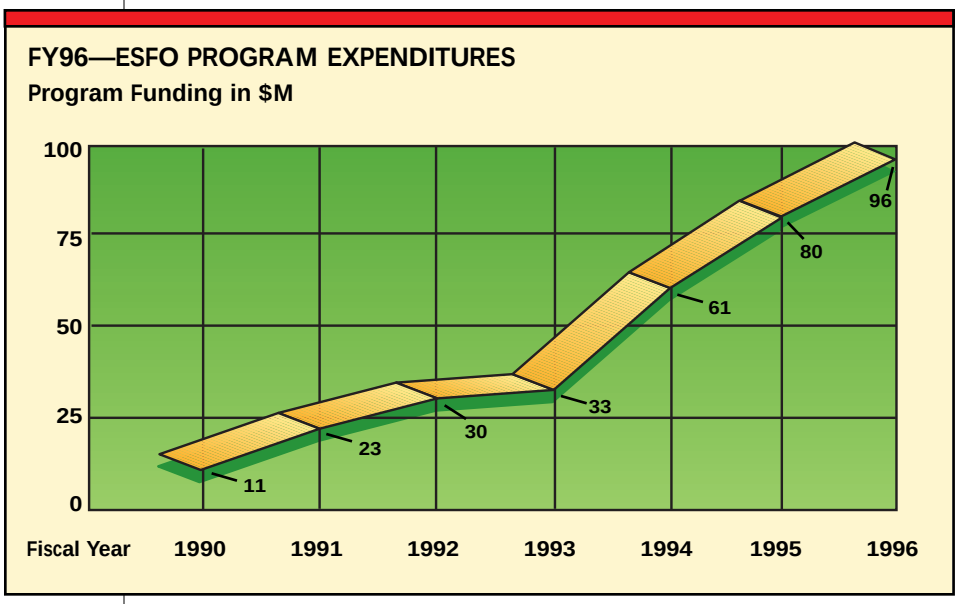
Because of the serious threat to the safety and health of the community of some 5,000 people, the Corps used the Rapid Response Program last year so that we could begin cleanup operations as quickly as possible. That approach enabled us to begin the demolition of the structures at the site. This year, we awarded a cost-reimbursement contract for remediation of the industrial complex, which encompasses nearly 1 million square feet. The work at this Superfund site has been characterized by excellence in partnering, project management, construction, and innovative cost-reimbursement contracting techniques.

Stratford/Raymark Superfund Site, Connecticut

Raymark Industries, located in Stratford, Connecticut, operated from 1919 to 1989, producing brakes, clutch parts, and other products. Raymark disposed of its wastes, which contained lead, polychlorinated biphenyls (PCBs), asbestos, and other contaminants, in a series of lagoons on its 33-acre site. The waste sludge material from the lagoons was used as fill for construction around Stratford between 1940 and 1977. Through a TERC, we successfully completed the remediation of residential properties throughout Stratford within 16 months. We are now remediating the Raymark site—decontaminating and demolishing 15 acres of industrial buildings, capping the site, extracting nonaqueous phase liquids and gas from the groundwater, and stabilizing foundations for future development, among other activities. The use of TERC, combined with effective partnering, should enable us to complete the entire $85 million project in 22 months.

ESFO Environmental Support for Others

Through our Environmental Support for Others (ESFO) program, the Corps provides high-quality engineering and environmental services to federal agencies, as well as to state and local government agencies. Any agency that lacks the in-house capability to manage such services can engage the Corps, on a cost-reimbursable basis, to act as an extension of its staff.



Partnership is the key. The Corps helps an agency comply with environmental regulations within the constraints of time and budget. We oversee progress and the allocation of appropriate staffing and funding, conduct budget reviews, and issue guidance. Throughout, the customer agency retains legal responsibility and control over its program.

The ESFO program is fully funded by the agencies receiving the Corps' assistance. The funding is provided in accordance with a memorandum of agreement (MOA) or an interagency agreement (IAG) between the Corps and each agency.

Commodity Credit Corporation

The CCC is responsible for cleaning up contamination caused by its former grain-storage facilities. The Corps is assisting the CCC under a 1992 MOA in which we are designing and constructing alternative drinking water systems and cleanup operations for carbon tetrachloride aquifer contamination. FY96 expenditures totaled $597,000.

Farm Services Agency

The Corps assists the Farm Services Agency, in accordance with a 1991 MOA, with remediating contaminated properties acquired through foreclosures and bankruptcies. In FY96, we worked at 150 different farm sites, removing USTs and containers of pesticides and herbicides, as well as cleaning up the contamination caused by these products. FY96 expenditures totaled $3.2 million.

Federal Aviation Administration

The Corps has had an IAG with the FAA since 1993. The FAA relies on the Corps as the "cornerstone" of its environmental restoration mission. In FY96, the Corps executed environmental compliance and occupational safety and health assessments for all nine FAA regions. We also removed and replaced USTs, cleaned up resulting contamination, conducted PCB and asbestos surveys and abatement projects, and closed landfills. FY96 expenditures totaled $12.7 million.

Federal Emergency Management Agency

Under a 1993 MOA, the Corps is working on an aggressive program to bring all FEMA Emergency Alert System storage tanks into compliance with environmental regulations. FEMA used the tanks to store diesel fuel, gasoline, or propane. We are removing tanks from more than 350 sites and replacing some with aboveground tanks. We also are cleaning up any fuel contamination at these sites. FY96 expenditures totaled $2.9 million.

Department of Energy

The Corps provides DOE with a wide range of environmental services under a 1990 IAG. At former nuclear weapons plants and other federal sites contaminated by radioactive wastes, our activities include cost estimates, work plans, environmental studies, design and construction of waste management and remediation projects, real estate actions, and program reviews. In FY96, we conducted 13 cleanups at seven DOE sites with our Naturally Occurring Radioactive Materials program.

Our Rapid Response Program, which we use for time-critical projects, served DOE at three sites. One of those sites was the Palos Forest Preserve near Chicago. The Forest Preserve was contaminated with wastes containing low-level radioactive nuclides and leachable concentrations of organic compounds, posing a threat to workers and visitors at the site. We removed and disposed of nearly 400 cubic yards of mixed waste, processed the waste, and restored the site to its original contours. We completed this large, time-critical project in only six weeks. Our expenditures for FY96 DOE projects totaled $17.2 million.

Overseas Environmental Programs

The Corps manages a number of environmental projects overseas. We investigate contaminated sites, as well as design and construct appropriate remediation measures. We also manage contracts for services such as the preparation of environmental management plans for military installations, removal of tanks, disposal of contaminated soils, and laboratory analyses. In FY96, our international environmental projects totaled more than $120 million.

Europe

We provided many services to U.S. military installations in Europe during FY96. The following are examples of some of our unique projects:

- ***Operation Joint Endeavor Support.*** Corps environmental personnel in Hungary, Bosnia, and Croatia investigated areas where spills have occurred, consulted on technical issues, sampled and tested soil and groundwater, and restored contaminated sites.

- ***Environmental Status Reports.*** The Corps prepared environmental status reports on U.S. military installations being closed and returned to host nations. The reports are used to help determine the residual value settlement between the United States and the host nations and may also serve to define the liability of the United States regarding claims of environmental damage.

- ***Tankman Program.*** The Corps maintains a database—called the Tankman Program—that describes the physical condition and location of all permanent tanks used to store POL and other hazardous materials at Army installations in Europe. We visited the sites to investigate existing records, verified the location of tanks, and provided training on the use of the database.

Middle East and Africa

We conducted three major projects in the Middle East and Africa:

- ***Department of Defense Education Activity Asbestos Management Program.*** The Corps continued our work, begun in the mid-1980s, on a project involving asbestos abatement at and restoration of DoD educational facilities in 14 countries around the world.

- ***Chemical Weapons Destruction Analytical Laboratory.*** We initiated a project to renovate a building and install new chemical analytical equipment to monitor environmental conditions around several chemical weapon destruction facilities.

- ***Gulf War Cleanup.*** The Corps processed some 1,500 tons of hazardous waste that accumulated in several Middle East countries during the Gulf War. We identified and packaged 30 types of industrial wastes and shipped them to treatment and disposal facilities in Saudi Arabia and the United States.

Latin America and South America

The Corps provided support on a wide variety of environmental projects in Latin America and South America. Our FY96 projects included the following:

- Sedimentation study for the Minister of Environment, Columbia
- Hydraulic training for the Ministry of Public Works, Guyana
- Water resources study in Bolivia
- Environmental studies in Panama
- Environmental cleanup of radar and communication sites in Honduras
- Assessment of mine clearing in the Malvinas Islands, Argentina
- Environmental compliance assessment systems in Honduras and Panama.

Pacific Rim Nations

We conducted a full range of environmental projects on Army, Air Force, Navy, and Marine Corps bases throughout Korea and Japan. In FY96, we removed underground storage tanks, installed monitoring wells, and remediated contaminated soil.

Environmental Program Initiatives

The Corps is working on a number of initiatives as we strive to provide our customers with the latest technological developments and the best products and services available for hazardous waste cleanup.

Stewardship of Taxpayer Funds

As the government downsizes and restructures to reduce its budget, the Corps continues to improve the way we manage our resources. One improvement is the reduction in the size of the division offices that oversee district execution of the projects. The result is a 6.3 percent reduction in overall management and support costs. We are also consolidating execution of those projects within fewer districts to maximize the effort and simplify coordination with customers.

The Corps is conducting other initiatives to improve efficiency and effectiveness in the use of our personnel and financial resources, administrative processing of resource documents, functional consolidation of resource responsibilities, and more effective contracting. Automation of existing manual processes will play an important role in improved resource efficiency.

Innovative Technology

The Corps applies innovative technologies in many of our environmental restoration projects. To meet our needs for technologies that will enable us to reduce costs and improve cleanup performance, the Corps established an Innovative Technology Advocate (ITA) program. We have placed ITAs at Headquarters; the Center of Expertise for Hazardous, Toxic, and Radioactive Waste (HTRW); the New England Division; and the Baltimore, Omaha, Kansas City, Tulsa, Sacramento, and Alaska districts. To promote the use of innovative technology throughout the Corps, we developed a comprehensive Innovative Technology Program Plan.

ITAs face the challenge of overcoming barriers to the use of innovative technologies by bringing their knowledge of research, development, and technology transfer to the HTRW environmental restoration process. ITAs monitor emerging technologies from federal laboratories and industry to identify technologies that have the potential to reduce costs and improve environmental investigation and remediation. Also, they support the Federal Remediation Technologies Roundtable, serving on subcommittees to seek out the most effective ways to disseminate information on innovative technologies and to enhance consideration of innovative technologies within the Corps. One approach was the creation of an Innovative Technology home page to disseminate information electronically. The home page is accessed approximately 1,000 times a week.

Partnering

The Corps continually seeks better ways to make decisions that will enable us to accomplish our environmental mission and also generate broad support from other agencies and interests. Partnering is one of a variety of tools that the Corps uses to meet those needs effectively.

Partnering involves a commitment by the participants to foster quick project implementation, improve cost-effectiveness, and avoid conflicts and litigation disputes. It is a process by which two or more organizations with shared interests act as a team to remove all organizational impediments that prevent open communication within the team, to provide open access to information, and to empower working-level staff to resolve as many issues as possible.

The Corps is committed to the concept of partnering and enthusiastically encourages participants in environmental restoration projects—other DoD agencies, contractors, federal and state regulatory agencies, local governments, community groups, and private organizations or individuals—to work as a team. A partnering relationship enables the development of a clear sense of mission among all involved stakeholders and promotes appropriate empowerment, delegation, and assumption of responsibility.

Technical Capabilities

HTRW Technical Guidance Development

The HTRW Technical Guidance Development program updated a number of documents, including the engineer regulation on chemical data quality management. It also published several new documents, including two reports, three guide specifications, six engineer technical letters, and an engineer manual. Many of these documents can be obtained through the HTRW Center of Expertise home page at **http://www.mrd.usace.army.mil/mrded-h/mrded-h.html.** The manual—EM200-1-4, *Risk Assessment Handbook, Environmental Evaluation*—is the second in the risk assessment series. It provides our HTRW managers with basic requirements for planning, evaluating, and conducting environmental risk assessments within the framework of existing EPA guidelines, and it defines the expected quality and goals of the overall program.

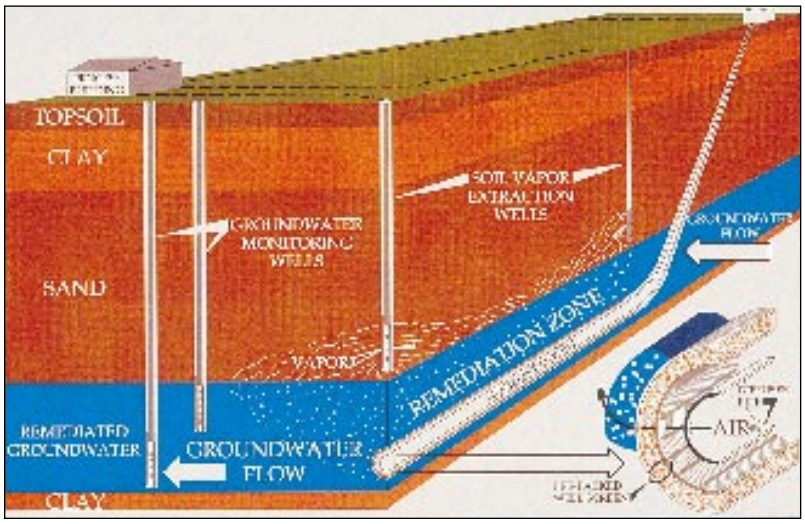
Site Characterization and Analysis Penetrometer System

SCAPS is an innovative cone penetrometer rig that enables us to screen and characterize contaminated sites rapidly. In FY96, the Corps used SCAPS at several Air Force bases, including Carswell, Pope, Seymour Johnson, Kelly, and Cape Canaveral. Among other work, we installed groundwater monitoring points for a phytoremediation study of TCE, used a direct sparge ion trap mass spectrometer to define an area of TCE contamination, and used a laser-induced fluorescence probe to identify the extent of fuel contamination and to collect samples to study intrinsic remediation fuel-weathering processes.

At Lake City Army Ammunition Plant, we used SCAPS to collect data to enhance the conceptual model of the site before beginning design activities. We also used SCAPS to determine the extent of petroleum contamination at Fort Meade, the former Donaldson Air Force Base, and the former Clinton Sherman Industrial Airpark, among many others.

Army Groundwater Modeling Technical Support Program

With this program, which includes technical consultation, technology transfer, and demonstration activities, the Corps can ensure appropriate and effective application of groundwater modeling to HTRW projects. An example of the technology available through this program is the Groundwater Modeling System—an excellent tool for understanding and illustrating complex sites. We used this tool to study subsurface geology and contaminant transport pathways at the Lipari Landfill Superfund site. We were able to visualize the complex marsh geology, which included subsurface paleochannels; to analyze aquifer pump test information; and to visualize the movement of various groundwater contaminants discovered during ongoing remediation activities. During FY96, we used the program's services at 22 Army sites.



The Army Groundwater Modeling Technical Support Program also helped to sponsor the Third Annual Groundwater Model Users Workshop held in August 1996. More than 100 people from the Army, Navy, and Air Force attended this meeting where the latest advances in groundwater modeling were presented.

Contracting Strategies

Total Environmental Restoration Contracts

A TERC is a flexible, "cradle-to-grave" contract that allows one contractor to provide all services needed to clean up a site contaminated by hazardous, toxic, or radioactive waste. We developed the TERC acquisition strategy to meet the unique requirements of certain high-priority, complex, time-sensitive HTRW cleanup projects. TERCs save time and money by shifting the emphasis from studies to cleanups and by decreasing contract solicitation times. TERCs also allow effective sequencing of work, streamlined coordination, elimination of duplicate efforts, reduction of costly changes, faster resolution of site problems, and faster and more fluid on-site operations. As of the end of FY96, the Corps had awarded 12 TERCs to eight contractors and obligated $609.8 million.

Rapid Response Program

Under our Rapid Response Program, we can provide fast-track action within 30 to 60 days after we receive initial funding from a customer. The Corps provides that responsive approach regardless of the previous site characterization or the extent of the contamination. The Corps also assists the customer in evaluating remediation alternatives, interacting with regulatory authorities, preparing a final report documenting field activities, and closing the site.

Small Action Remedial Tool

Historically, the Corps has developed contractual tools to facilitate the execution of large, complex, multimillion-dollar projects for the Superfund and the Defense Environmental Restoration Program. However, those tools are not always cost-effective for smaller projects—those costing $250,000 or less. To meet the emerging needs of many customers for small, one-time-only projects, the Corps developed a small-project indefinite-delivery contract—the Small Action Remedial Tool (SMART).

SMART incorporates several strategies: (1) the contractor must be able to provide a broad scope of environmental services so that only one contract is needed at a site; (2) two or more contractors must be available to compete for individual delivery orders; (3) performance work statements must be used rather than detailed plans and specifications; (4) delivery orders must be firm-fixed-price; (5) the contractor must attend a preproject site visit with Corps personnel to ensure understanding of the project; and (6) the district must provide a management plan to capture its standard operating procedures. The first two SMART contracts have been so successful that we used half of their total $5 million capacity in about 18 months.

Corps' TERC contractors

OHM Remediation Services Corporation

Morrison Knudsen Corporation

RUST Environment & Infrastructure

International Technology Corporation

Foster-Wheeler Environmental Corporation

Stone & Webster Engineering Corporation

Jacobs Engineering Group, Inc.

ICF Kaiser Engineers, Inc.

Stakeholder–Community Involvement

The Corps is committed to ensuring that the public is an active participant in helping us accomplish our environmental mission. Because public involvement and teamwork are essential components of our restoration efforts, we are encouraging the establishment of Restoration Advisory Boards at FUDS. These boards promote cooperation by fostering dialogue among the Corps, regulators, local governments, and local residents. At some FUDS properties, existing technical review committees are being converted into Restoration Advisory Boards through the addition of local community members.

Restoration Advisory Boards at the former Black Hills Army Depot in South Dakota, the former Camp Simms in Washington, D.C., and the former West Virginia Ordnance Works demonstrate how working together in partnership with local residents can enhance our cleanup efforts.

HTRW Training Program

As our HTRW mission has grown, the Corps has developed a wide array of courses and workshops tailored to our mission needs. We now offer courses and workshops on topics ranging from the administration of TERC delivery orders, risk assessment and management, environmental sampling, safety and health at hazardous waste sites, and environmental regulations, to technological aspects of environmental restoration, such as soil vapor extraction and bioventing. During FY96, nearly 1,100 students participated in our HTRW training program.

Small Business Programs

Small businesses play a key role in the Corps' environmental program. Whether partnering with major contractors through our mentor–protégé program or serving as prime contractors, small, small disadvantaged, and women-owned small businesses have the expertise that allows them to provide innovative solutions to local problems. During FY96, small business firms were awarded more than $160 million in Corps environmental restoration contracts.

Each year, the Corps recognizes the outstanding contribution made by small business firms by selecting one of them as the Army's nominee for the DoD Environmental Restoration/Small Business Excellence Award.

Electronic Technology

The Corps is using the Internet to foster business participation in environmental restoration contracts. Electronic bidding is an easy and inexpensive method of making contract bid documents available. The cost of plans and specifications is significantly reduced, and notices of requests for bids and proposals are available immediately.

We also have a number of home pages. The Web portal for the Corps of Engineers is **http://www.usace.army.mil**.
The home page of the Environmental Division—**http://www.mrd.usace.army.mil/mrded-h/access/statement.html**—describes our mission, organization, programs, and initiatives. We continually update our home page to reflect our activities and to present new items of interest, including contracting opportunities and long-range forecasts for environmental restoration work. Many districts also list current solicitations on their home pages. The Center of Expertise for HTRW also has a home page—**http://www.mrd.usace.army.mil/mrded-h/mrded-h.html**.

Management

To ensure that we complete our environmental restoration projects at the lowest reasonable cost, the Corps initiated a cost management technique. This technique involves collecting and analyzing site data on cost-reimbursement projects in which costs must be monitored and managed by the government on a real-time basis. The goal is to optimize the cleanup costs for each project based not on an initial "target" cost, but on a realistic assessment of the cost of the cleanup approaches used in the project. This technique, called "lowest reasonable cost," will not be used to provide a promise of a specific price to a customer. Instead, it represents a commitment to a management philosophy that seeks to explore as many alternatives as are reasonably available to minimize cost rather than be satisfied at not experiencing a cost overrun.

US Army Corps of Engineers®

Organizational Structure

Headquarters Organization

The U.S. Army Corps of Engineers is a major Army command, led by the Chief of Engineers, Lieutenant General Joe N. Ballard. The Corps' two program directorates are Civil Works and Military Programs. The Environmental Division, with its five functional branches, manages and oversees the Corps' nationwide environmental restoration mission and reports to the Director of Military Programs, Brigadier General Phillip R. Anderson.

Field Organization

The environmental mission within the Corps is executed by our field organization. The divisions within the field organization supervise design districts that perform studies and designs, and geographic military districts that perform project management and construction supervision. Our environmental activities are supported by centers of expertise that are responsible for technical oversight, and by research and development laboratories.

Field Activities

HTRW Center of Expertise

Omaha	(402) 697-2555

Ordnance & Explosives Center of Expertise

Huntsville	(205) 895-1510

Civil Works HTRW Design Districts

St. Louis	(314) 331-8010
Buffalo	(716) 879-4200
Nashville	(615) 736-5626

Military HTRW Design Districts

Kansas City	(816) 426-3201
Omaha	(402) 697-2555
Baltimore	(410) 962-4545
New England Division	(617) 647-8220
Alaska	(907) 753-2504
Seattle	(206) 764-3690
Honolulu	(808) 438-1069
Savannah	(912) 652-5226
Sacramento	(916) 557-7490
Tulsa	(918) 669-7201
Transatlantic Programs Center	(703) 665-4073

Geographic Military Districts

New York	(212) 264-0100
Norfolk	(804) 441-7601
Philadelphia	(215) 656-6501
Louisville	(502) 582-5601
Mobile	(205) 690-2511
Los Angeles	(213) 894-5300
Little Rock	(501) 324-5531
Albuquerque	(505) 766-2732
Fort Worth	(817) 334-2300

Other Programs

Rapid Response Program Manager
(402) 221-7714

SMART Contract Program Manager
(816) 426-5461

Overseas Environmental Programs

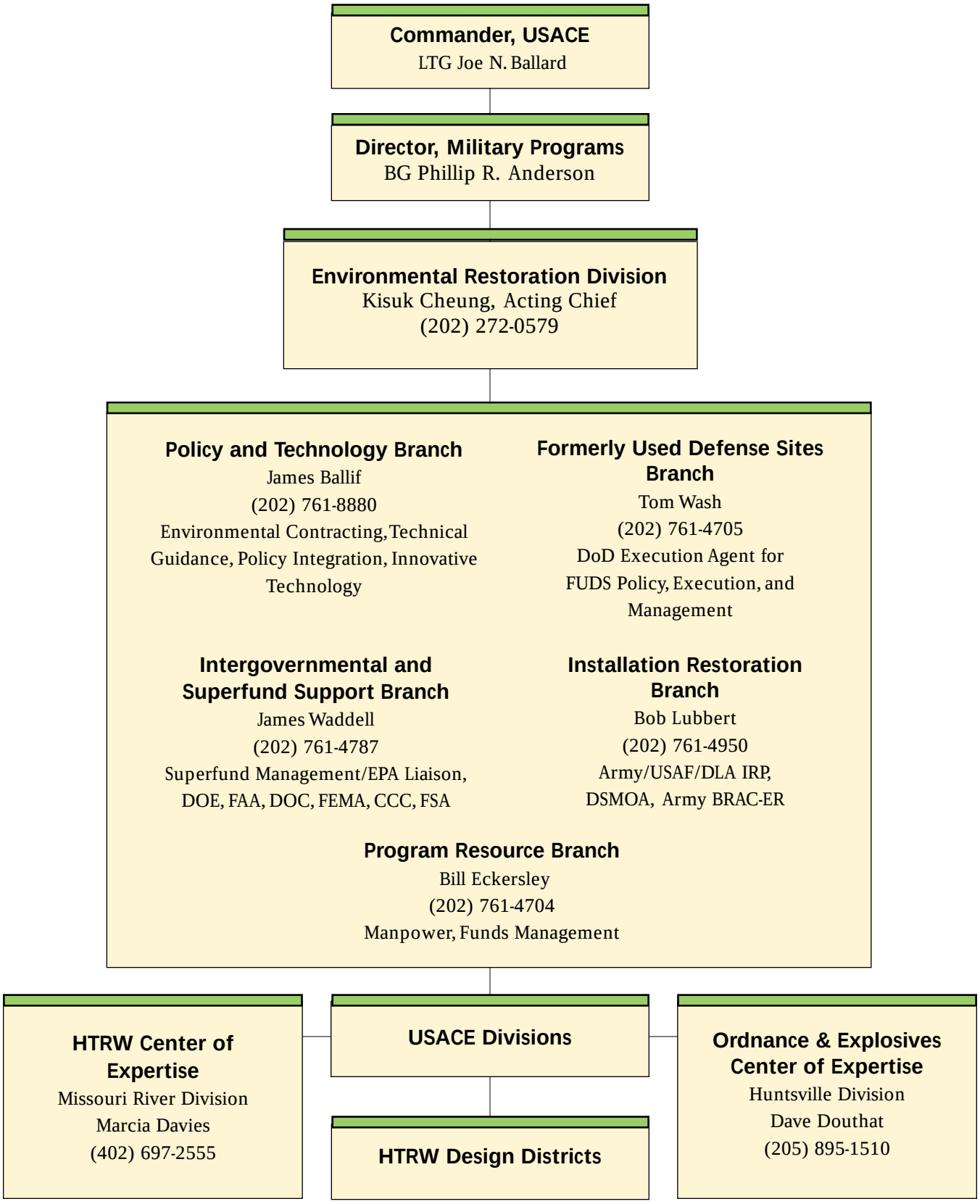
Europe	0049-611-816-2400	Latin America and South America	(334) 694-4253
Middle East and Africa	(540) 665-3760	Pacific Rim Nations	(808) 438-6974

The Corps' HTRW design districts execute environmental restoration studies and design. The geographic military districts serve as the project managers for all phases of environmental projects.

U.S. Army Corps of Engineers Division Laboratories

Missouri River, Omaha, NE	(402) 444-4300	South Atlantic, Marietta, GA	(404) 421-5296
New England, Hubbardston, MA	(617) 752-1095	South Pacific, Sausalito, CA	(415) 332-3374
North Pacific, Troutdale, OR	(503) 665-4166	Southwestern, Dallas, TX	(214) 767-2502
Ohio River, Cincinnati, OH	(513) 589-3600	Waterways Experiment Station, Vicksburg, MS	(601) 634-2664

Environmental Organization



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